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171 What is claimed is:

[Claim 1. An isolated DNA sequence selected from the group consisting of:

- (a) a DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of amino acids 1 to X of FIG. 2A and amino acids 1 to 233 of FIG. 3A, wherein X is an amino acid from 163 to 235; and
- (b) a DNA sequence capable of hybridization to the complement of the DNA sequence of (a) under moderately stringent conditions (50°C., 2x SSC) and which encodes a polypeptide that is capable of binding to TNF and which is at least 88% identical to a polypeptide encoded by the DNA of (a).]

[Claim 2. An isolated DNA sequence selected from the group consisting of:

- (a) a DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of amino acids 1 to X of FIG. 2A and amino acids 1 to 233 of FIG. 3A, wherein X is an amino acid from 163 to 235; and
- (b) a DNA sequence capable of hybridization to the complement of the DNA sequence of (a) under moderately stringent conditions (50°C., 2x SSC) and which encodes TNF-R protein that is capable of binding greater than 0.1 moles TNF per nmole TNF-R and which is at least 88% identical to a polypeptide encoded by the DNA of (a).]

[Claim 3. An isolated DNA sequence selected from the group consisting of:

- (a) a DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of amino acids 1 to X of FIG. 2A and amino acids 1 to 233 of FIG. 3A, wherein X is an amino acid from 163 to 235; and

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- (b) a DNA sequence capable of hybridization to the complement of the DNA sequence of (a) under moderately stringent conditions (50°C., 2x SSC) and which encodes TNF-R protein that is capable of binding greater than 0.5 nmoles TNF per nmole TNF-R and which is at least 88% identical to a polypeptide encoded by the DNA of
173 (a).]

171 173 [Claim 4. A recombinant expression vector comprising the DNA sequence according to claim 1.]

171 173 [Claim 5. A recombinant expression vector comprising the DNA sequence according to claim 2.]

171 173 [Claim 6. A recombinant expression vector comprising the DNA sequence according to claim 3.]

171 173 [Claim 7. A host cell transformed or transfected with the vector according to claim 4.]

171 173 [Claim 8. A host cell transformed or transfected with the vector according to claim 5.]

171 173 [Claim 9. A host cell transformed or transfected with the vector according to claim 6.]

171 [Claim 10. An isolated DNA sequence selected from the group consisting of:

- (a) a DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of amino acids 1 to X of FIG. 2A and amino acids 1 to 233 of FIG. 3A, wherein X is an amino acid from 163 to 235; and
- (b) a DNA sequence that encodes a polypeptide identical to the polypeptide encoded by the DNA of (a) except for modification(s) to the amino acid sequence selected from the group consisting of:
(i) inactivated N-linked glycosylation sites; (ii) altered KEX2 protease cleavage sites; (iii) conservative amino acid substitutions;
(iv) substitution or deletion of cysteine residues; and

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(v) combinations of modifications (i)-(iv); which such polypeptide
is capable of binding TNF.]

173 [Claim 11. An isolated DNA sequence selected from the group consisting of:

- (a) a DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of amino acids 1 to X of FIG. 2A and amino acids 1 to 233 of FIG. 3A, wherein X is an amino acid from 163 to 235; and
- (b) a DNA sequence that encodes a polypeptide identical to the polypeptide encoded by the DNA of (a) except for modification(s) to the amino acid sequence selected from the group consisting of:
(i) inactivated N-linked glycosylation sites; (ii) altered KEX2 protease cleavage sites; (iii) conservative amino acid substitutions;
(iv) substitution or deletion of cysteine residues; and
(v) combinations of modifications (i)-(iv); which encoded polypeptide is capable of binding greater than 0.1 moles TNF per nmole of such polypeptide.]

171 [Claim 12. An isolated DNA sequence selected from the group consisting of:

- (a) a DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of amino acids 1 to X of FIG. 2A and amino acids 1 to 233 of FIG. 3A, wherein X is an amino acid from 163 to 235; and
- (b) a DNA sequence that encodes a polypeptide identical to the polypeptide encoded by the DNA of (a) except for modification(s) to the amino acid sequence selected from the group consisting of:
(i) inactivated N-linked glycosylation sites; (ii) altered KEX2 protease cleavage sites; (iii) conservative amino acid substitutions;
(iv) substitution or deletion of cysteine residues; and
(v) combinations of modifications (i)-(iv); which encoded

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polypeptide is capable of binding greater than 0.5 moles TNF per nmole of such polypeptide. 7

[Claim 13. A recombinant expression vector comprising the DNA according to any one of claims 10, 11 or 12.]

[Claim 14. A host cell transformed or transfected with the vector according to claim 13.]

[Claim 15. A DNA sequence that encodes a polypeptide having the amino acid sequence selected from the group consisting of (a) amino acids 1-235 of FIG. 2A; and (b) a DNA sequence capable of hybridization to the DNA sequence of (a) under moderately stringent conditions (50°C., 2x SSC) and which encodes a polypeptide that is capable of binding to TNF and which is at least 88% identical to a polypeptide encoded by the DNA of (a).]

[Claim 16. A recombinant expression vector comprising the DNA sequence according to claim 15.]

Claim 17. A host cell transformed or transfected with the vector according to claim 16.

Claim 18. An isolated DNA molecule encoding a protein comprising a sequence of amino acids selected from the group consisting of amino acids 1-163 of FIG. 2A and amino acids 1-233 of FIG. 3A, wherein said protein is capable of binding TNF.

Claim 19. The isolated DNA molecule according to Claim 18, wherein said protein comprises amino acids 1-163 of FIG. 2A.

Claim 20. The isolated DNA molecule according to Claim 18, wherein said protein comprises amino acids 1-185 of FIG. 2A.

Claim 21. The isolated DNA molecule according to Claim 18, wherein said protein comprises amino acids 1-235 of FIG. 2A.

Claim 22. An isolated DNA molecule encoding a protein selected from the group consisting of:

- (a) a polypeptide having a sequence of amino acids comprising amino acids 1-163 of FIG. 2A;

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- (b) a polypeptide having a sequence of amino acids comprising amino acids 1-233 of FIG. 3A; and
(c) a polypeptide identical to the polypeptides of (a) or (b) except for one or more modification(s) to the sequence of amino acids selected from the group consisting of: (i) inactivated N-linked glycosylation sites; (ii) altered KEX2 protease cleavage sites; and (iii) substitution or deletion of cysteine residues,
wherein said protein is capable of binding TNF.

Claim 23. A recombinant expression vector comprising the DNA molecule according to Claim 18, 19, 20, 21 or 22.

Claim 24. A host cell transformed or transfected with the recombinant expression vector according to Claim 23.

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Claim 25. The host cell of Claim 24, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 26. The host cell of Claim 25, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

Claim 27. The host cell of Claim 26, wherein said mammalian cell is CHO cells.

Claim 28. A process for producing a protein capable of binding TNF, said process comprising culturing a host cell of Claim 24 under conditions suitable to effect expression of said protein.

Claim 29. The process of Claim 28, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 30. The process of Claim 29, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

Claim 31. The process of Claim 30, wherein said mammalian cell is CHO cells.

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Claim 32. An isolated DNA molecule encoding a soluble TNF receptor protein comprising a sequence of amino acids selected from the group consisting of from about amino acid 1 to about amino acid 163 of FIG. 2A and from about amino acid 1 to about amino acid 233 of FIG. 3A, wherein said soluble TNF receptor protein is capable of binding TNF protein.

Claim 33. The isolated DNA molecule according to Claim 32, wherein said soluble TNF receptor protein comprises from about amino acid 1 to about amino acid 163 of FIG. 2A.

Claim 34. The isolated DNA molecule according to Claim 32, wherein said soluble TNF receptor protein comprises from about amino acid 1 to about amino acid 185 of FIG. 2A.

Claim 35. The isolated DNA molecule according to Claim 32, wherein said TNF soluble receptor protein comprises from about amino acid 1 to about amino acid 235 of FIG. 2A.

Claim 36. An isolated DNA molecule encoding a soluble TNF receptor protein selected from the group consisting of:

- (a) a TNF receptor polypeptide having a sequence of amino acids comprising from about amino acid 1 to about amino acid 163 of FIG. 2A;
- (b) a TNF receptor polypeptide having a sequence of amino acids comprising from about amino acid 1 to about amino acid 233 of FIG. 3A; and
- (c) a TNF receptor polypeptide identical to the TNF receptor polypeptides of (a) or (b) except for one or more modification(s) to the sequence of amino acids selected from the group consisting of: (i) inactivated N-linked glycosylation sites; (ii) altered KEX2 protease cleavage sites; and (iii) substitution or deletion of cysteine residues.

wherein said soluble TNF receptor protein is capable of binding TNF.

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Claim 37. A recombinant expression vector comprising the DNA molecule according to Claim 32, 33, 34, 35 or 36.

Claim 38. A host cell transformed or transfected with the recombinant expression vector according to Claim 37.

Claim 39. The host cell of Claim 38, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 40. The host cell of Claim 39, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

Claim 41. The host cell of Claim 40, wherein said mammalian cell is CHO cells.

Claim 42. A process for producing a protein capable of binding TNF, said process comprising culturing a host cell of Claim 38 under conditions suitable to effect expression of said protein.

Claim 43. The process of Claim 42, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 44. The process of Claim 43, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

Claim 45. The process of Claim 44, wherein said mammalian cell is CHO cells.

Claim 46. An isolated DNA molecule encoding a soluble TNF receptor protein comprising a sequence of amino acids selected from the group consisting of from amino acid 1 to amino acid 163 of FIG. 2A and from amino acid 1 to amino acid 233 of FIG. 3A, wherein said soluble TNF receptor protein is capable of binding TNF protein.

Claim 47. The isolated DNA molecule according to Claim 46, wherein said soluble TNF receptor protein comprises from amino acid 1 to amino acid 163 of FIG. 2A.

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Claim 48. The isolated DNA molecule according to Claim 46, wherein said soluble TNF receptor protein comprises from amino acid 1 to amino acid 185 of FIG. 2A.

Claim 49. The isolated DNA molecule according to Claim 46, wherein said soluble TNF receptor protein comprises from amino acid 1 to amino acid 235 of FIG. 2A.

Claim 50. An isolated DNA molecule encoding a soluble TNF receptor protein selected from the group consisting of:

- (a) a TNF receptor polypeptide having a sequence of amino acids comprising from amino acid 1 to amino acid 163 of FIG. 2A;
- (b) a TNF receptor polypeptide having a sequence of amino acids comprising from amino acid 1 to amino acid 233 of FIG. 3A;
and
- (c) a TNF receptor polypeptide identical to the TNF receptor polypeptides of (a) or (b) except for one or more modification(s) to the sequence of amino acids selected from the group consisting of: (i) inactivated N-linked glycosylation sites; (ii) altered KEX2 protease cleavage sites; and (iii) substitution or deletion of cysteine residues.

wherein said soluble TNF receptor protein is capable of binding TNF.

Claim 51. A recombinant expression vector comprising the DNA molecule according to Claim 46, 47, 48, 49 or 50.

Claim 52. A host cell transformed or transfected with the recombinant expression vector according to Claim 51.

Claim 53. The host cell of Claim 52, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 54. The host cell of Claim 53, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

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Claim 55. The host cell of Claim 54, wherein said mammalian cell is CHO cells.

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Claim 56. A process for producing a protein capable of binding TNF, said process comprising culturing a host cell of Claim 52 under conditions suitable to effect expression of said protein.

Claim 57. The process of Claim 56, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 58. The process of Claim 57, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

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Claim 59. The process of Claim 58, wherein said mammalian cell is CHO cells.

Claim 60. An isolated DNA molecule encoding a protein comprising a sequence of amino acids selected from the group consisting of amino acids 1-163 of FIG. 2A and amino acids 1-233 of FIG. 3A, wherein said protein lacks amino acids 236-265 of FIG. 2A and amino acids 234-265 of FIG. 3A, respectively, and wherein said protein is capable of binding TNF.

Claim 61. The isolated DNA molecule according to Claim 60, wherein said protein comprises amino acids 1-163 of FIG. 2A.

Claim 62. The isolated DNA molecule according to Claim 60, wherein said protein comprises amino acids 1-185 of FIG. 2A.

Claim 63. The isolated DNA molecule according to Claim 60, wherein said protein comprises amino acids 1-235 of FIG. 2A.

Claim 64. An isolated DNA molecule encoding a protein selected from the group consisting of:

- (a) a TNF receptor polypeptide having a sequence of amino acids comprising amino acids 1-163 of FIG. 2A, wherein said polypeptide lacks amino acids 236-265 of FIG. 2A;
- (b) a TNF receptor polypeptide having a sequence of amino acids comprising amino acids 1-233 of FIG. 3A, wherein said

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polypeptide lacks amino acids 234-265 of FIG. 3A; and
(c) a TNF receptor polypeptide identical to the TNF receptor
polypeptides of (a) or (b) except for one or more
modification(s) to the sequence of amino acids selected from
the group consisting of: (i) inactivated N-linked glycosylation
sites; (ii) altered KEX2 protease cleavage sites; and
(iii) substitution or deletion of cysteine residues,
wherein said protein is capable of binding TNF.

Claim 65. A recombinant expression vector comprising the DNA molecule
according to Claim 60, 61, 62, 63 or 64.

Claim 66. A host cell transformed or transfected with the recombinant
expression vector according to Claim 65.

Claim 67. The host cell of Claim 66, wherein said host cell is selected from the
group consisting of a microbial cell and a mammalian cell.

Claim 68. The host cell of Claim 67, wherein said mammalian cell is selected
from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and
COS-7 cells.

Claim 69. The host cell of Claim 68, wherein said mammalian cell is CHO
cells.

Claim 70. A process for producing a protein capable of binding TNF, said
process comprising culturing a host cell of Claim 67 under conditions suitable to effect
expression of said protein.

Claim 71. The process of Claim 70, wherein said host cell is selected from the
group consisting of a microbial cell and a mammalian cell.

Claim 72. The process of Claim 71, wherein said mammalian cell is selected
from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and
COS-7 cells.

Claim 73. The process of Claim 72, wherein said mammalian cell is CHO cells.

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Claim 74. An isolated DNA molecule encoding a protein comprising a sequence of amino acids selected from the group consisting of amino acids 1-163 of FIG. 2A and amino acids 1-233 of FIG. 3A, wherein said protein lacks a functional transmembrane region, and wherein said protein is capable of binding TNF.

Claim 75. The isolated DNA molecule according to Claim 74, wherein said protein comprises amino acids 1-163 of FIG. 2A.

Claim 76. The isolated DNA molecule according to Claim 74, wherein said protein comprises amino acids 1-185 of FIG. 2A.

Claim 77. The isolated DNA molecule according to Claim 74, wherein said protein comprises amino acids 1-235 of FIG. 2A.

Claim 78. An isolated DNA molecule encoding a protein selected from the group consisting of:

- (a) a TNF receptor polypeptide having a sequence of amino acids comprising amino acids 1-163 of FIG. 2A;
- (b) a TNF receptor polypeptide having a sequence of amino acids comprising amino acids 1-233 of FIG. 3A; and
- (c) a TNF receptor polypeptide identical to the TNF receptor polypeptides of (a) or (b) except for one or more modification(s) to the sequence of amino acids selected from the group consisting of: (i) inactivated N-linked glycosylation sites; (ii) altered KEX2 protease cleavage sites; and (iii) substitution or deletion of cysteine residues.

wherein said protein lacks a functional transmembrane region; and wherein said protein is capable of binding TNF.

Claim 79. A recombinant expression vector comprising the DNA molecule according to Claim 74, 75, 76, 77 or 78.

Claim 80. A host cell transformed or transfected with the recombinant expression vector according to Claim 79.

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Claim 81. The host cell of Claim 80, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 82. The host cell of Claim 81, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

Claim 83. The host cell of Claim 82, wherein said mammalian cell is CHO cells.

Claim 84. A process for producing a protein capable of binding TNF, said process comprising culturing a host cell of Claim 80 under conditions suitable to effect expression of said protein.

Claim 85. The process of Claim 84, wherein said host cell is selected from the group consisting of a microbial cell and a mammalian cell.

Claim 86. The process of Claim 85, wherein said mammalian cell is selected from the group consisting of L cells, C127 cells, 3T3 cells, CHO cells, BHK cells and COS-7 cells.

Claim 87. The process of Claim 86, wherein said mammalian cell is CHO cells.

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